1087-150 **1D Misguides 3-D: An Echocardiographic and Magneetic Resonance Imaging Comparison**

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INTRODUCTION For normal (NL) ventricles it is assumed that 1D measurements of LV end diastolic dimension (EDD) accurately reflect 3D LV volume given that NL ventricles are typically symmetric ellipses of rotation. However, pts with dilated ischemic cardiomyopathies (CM) seldom have a symmetric LV. Nevertheless, a threshold of EDD is used to distinguish NLs (55mm). We hypothesize that, despite high correlation of EDD and LV volume, a threshold of EDD does not discriminate true NLs from CM (true NL is defined as EDV <120ml). **METHODS** We compared EDD by transthoracic echocardiography (ECHO) and by magnetic resonance imaging (MRI) against EDV by MRI. Using EDD >55mm as a discriminator, we studied 28 subjects: 14 CM pts (60±6yr) referred for the Dor procedure (surgical LV reconstruction) and 14 NLs (50±16yr). MRI and ECHO were performed within 1.6±4.3 mo of each other. $ECHO_{EDD}$ was measured using ASE conventions and MRI_{EDD} was measured using the standard short axis view. MRI EDV was measured via Simpson's rule. **RESULTS** EDD by ECHO was 41±5 and 61±9mm (NLs and CM pts) and by MRI was 44±3 and 66±7mm (NLs and CM pts), (p=NS between groups). EDV for NLs and pts was 101±20 and 265±78ml, respectively, (p<0.0001). For the pooled population the correlation coefficient of EDV with $ECHO_{EDD}$ and MRI_{EDD} was r=0.84 (p<0.001), and r=0.90 (p<0.001), respectively. However, regression analysis of $ECHO_{EDD}$ and MRI_{EDD} vs EDV had relatively large standard errors of ±55 and ±44ml, respectively. Thus, based on an EDD threshold of 55mm there was poor prediction of CM compared to an EDV of 120ml as the true discriminator. For example, 2 CM and 3 NLs were miscategorized by ECHO (18%) and 1 CM and 3 NLs were miscategorized by MRI (14%). **CONCLUSION** 1D measurements of EDD, either by ECHO or MRI, although highly correlated with EDV, are poor predictors of LV volume, not only in pts with cardiomyopathy, but also in normals. Thus, reliance on 1D EDD measurements can result in sizeable erroneous 3D LV volume estimates indicating that EDV should be the mainstay for the evaluation of patients with dilated ischemic cardiomyopathy. In this era of threshold medicine this misclassification rate has substantial clinical impact.

1087-151 **A New Imaging Perspective in Ischemic and Idiopathic Dilated Cardiomyopathy Using Cardiovascular Magnetic Resonance**

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Background: The diagnosis and management of dilated left ventricular (LV) systolic dysfunction is determined by the underlying disease process; namely an ischemic versus non-ischemic etiology. We investigated the role of cardiovascular magnetic resonance (CMR), in a heart failure/cardiomyopathy population, in particular the use of contrast enhanced (CE) MR of the myocardium.
Methods: MR scans were performed in 105 subjects including 90 patients with dilated LV systolic dysfunction. Sixty-three subjects had normal coronaries with a diagnosis of idiopathic dilated cardiomyopathy (IDCM) and 27 subjects had ischemic LV dysfunction (>50% stenosis in one or more coronary arteries). There were 15 controls (normal ECG, no cardiac risk factors and normal coronary angiography in 9/15). MR cine and CE myocardial imaging were performed on a 1.5T scanner (Siemens Sonata, Erlangen). Wall motion and the presence/extent of gadolinium hyperenhancement (HE) were assessed by 2 independent observers.
Results: All patients in the ischemic group showed widespread subendo/transmural HE consistent with the degree of LV dysfunction. In the IDCM subjects, 59% had no HE; the remaining 41% (26 subjects) had varying degrees of HE. In 8/26, HE was subendo/transmural (extensive in 4 subjects pointing to an ischemic basis for LV dysfunction despite normal coronary lumenography, and minor subendocardial HE in the remaining 4). In 18/26, HE was non-endocardial (parallel to muscle fibres or in patchy foci) which we believe represents the segmental fibrosis seen at pathology in IDCM hearts. There were no differences in LV functional parameters between the ischemic and IDCM groups, although risk factor score, % of male subjects, Q waves and mean HE score were significantly higher in the ischemic group (p<0.005). No controls showed HE.
Conclusion: CE MR is a useful tool in differentiating ischemic from non-ischemic LV dysfunction in conjunction with clinical factors and the pattern of HE. In addition to documenting ischemic infarction, MR also provides an in vivo opportunity to explore the clinical relevance of subtle processes such as segmental myocardial fibrosis within the heart failure/cardiomyopathy population.

1087-152 **Long-Term Follow-Up and Predictors of Clinical Outcome in Patients With Arrhythmogenic Right Ventricular Cardiomyopathy**

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Background: Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) is a genetically determined heart disease with a high incidence of potentially life-threatening ventricular tachyarrhythmias. We aimed to investigate the predictors of clinical outcome in patients with ARVC during long-term follow-up.
Methods: At our institution, 58 patients (42 male; age 44 ± 15 years) were diagnosed to have ARVC based on standardized diagnostic criteria. Age at first presentation was 37 ± 13 years. We investigated the clinical outcome of our patients in two groups: a) Life-threatening outcome (LTO), in the presence of sudden cardiac death, heart transplantation, VT with syncope, syncope with inducible VT > 240/min, b) Favorable outcome (FO), in the presence of mild symptoms. Family history, surface and signal-averaged ECG parameters, echocardiographic findings, response to medical therapy were analyzed in both groups.
Results: During a follow-up of 98 ± 100 months, there were 10 deaths, of which 7 were sudden. Overall, 34 patients had LTO and 24 had FO. Wider QRS duration in V1-V3 (114 ± 34 vs. 99 ± 19 ms, p<0.01), longer PQ interval (174 ± 50 vs. 167 ± 27 ms, p<0.005), presence of bundle-branch-block (11/32 vs. 1/24, p<0.01), extensive right ventricular dilatation (16/34 vs 5/24, p<0.05), left ventricular involvement (20/32 vs. 6/24, p<0.01), presence of heart failure (12/34 vs. 0/24, p<0.01) were predictors of a LTO. Medical therapy with Sotalol (12/24 vs. 7/34, p<0.05) was associated with a FO.
Conclusions: Our results suggest that predictors for an adverse clinical outcome in patients with ARVC during long-term follow-up are the presence of heart failure due to extensive right ventricular dilatation and/or left ventricular involvement and conduction abnormalities on surface ECG. Therapy with Sotalol was associated with a good clinical outcome.

POSTER SESSION

1088 Exercise Training and Rehabilitation Programs in Subjects With Cardiovascular Disease

Monday, March 18, 2002, 9:00 a.m.-11:00 a.m.
Georgia World Congress Center, Hall G
Presentation Hour: 9:00 a.m.-10:00 a.m.

1088-137 **Is There a Gender Difference in Risk Profile, Attendance, and Beneficial Effects of a Multidisciplinary Cardiac Rehabilitation Program?**

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Background: Despite higher morbidity and mortality among women (W) post MI or CABG, participation in multidisciplinary cardiac rehabilitation programs (MDCR), is lower than among men (M).
Goal: To assess gender differences in risk profile, attendance, and beneficial effects among MDCR participants.
Methods: One-hundred twenty-eight W and 646M, (34% post MI, 66% post CABG), participated in our phase II MDCR. MDCR included exercise (EX) training, nutritional counseling, risk factor and behavioral modification.
Results: W tended to be older (63±9vs60±10) and to have more hypertension (58%vs48%), diabetes (31%vs22%) and obesity (50%vs38%) and lower functional capacity (FC) (p<0.05 for all). Dropout rate was 7% among W and 4.5% among M (p=ns) and there was no difference in CR duration, number of sessions attended or time from event to CR.
Following are the MDCR effects among non-dropout patients:
Conclusions:
1. W post MI and CABG who enter MDCR are older, have lower FC and more risk factors compared to M
2. MDCR was equally beneficial to W and M in improving EX capacity and lipid profile, but not obesity
3. Attendance and dropout rates were equal among W and M.
4. Since W have higher risk profiles and the same benefits as M, they should be strongly encouraged to participate in MDCR.

	Women (n=119)		Men (n=591)		Benefit W vs M
	Pre MDCR	Post MDCR	Pre MDCR	Post MDCR	
EX Duration (min)	7.44+/-2.9	8.1+/-2.1*	8.8+/-2.9	10.3+/-2.6*	ns
METS	6.9+/-2.0	8.4+/-1.7*	8.5+/-2.3	10+/-2.3*	ns
LDL	141+/-37	116+/-25*	133+/-33	112+/-28*	ns
HDL	46+/-12	49+/-12*	38+/-11	40+/-11*	ns
TG	188+/-83	158+/-70*	179+/-109	144+/-63*	ns

There was no change in BMI. *=p<0.001

1088-138 **Effects of Age on Heart Rate Recovery After Submaximal Exercise During Cardiac Rehabilitation**

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Background: Cardiac rehabilitation has been shown to improve the heart rate recovery (HRR) response to maximal exercise testing, but the effect of exercise training on HRR after submaximal exercise in patients with coronary disease has not been examined.
Methods: The age-related effects of exercise training on the HRR response to submaximal bicycle and treadmill exercise were examined in 74 patients during 12 weeks of Phase II cardiac rehabilitation. There were 52 men and 22 women, whose mean age was 64 years. Initial HRR was calculated as the average difference in heart rates after 30 minutes of submaximal training exercise and after 1 minute of post-exercise walking during 3 sessions early in training; HRR after training was calculated as the average data from the same submaximal training exercises performed during the final 3 sessions of cardiac rehabilitation.
Results: For the entire group, exercise training was associated with a 29% increase in HRR after submaximal exercise (11.6 ± 6.8 to 15.0 ± 7.2 beats/min [bpm], p<0.0002),